

69169 U.S. PTO.



THE ASSISTANT COMMISSIONER FOR PATENTS  
Washington, D.C. 20231  
Box New Application

Sir:

Transmitted herewith for filing is the patent application of

Inventor: TAKU YAMAGAMI

For: RECORDING DEVICE, RECORDING METHOD, ELECTRONIC DEVICE METHOD  
OF CONTROLLING ELECTRONIC DEVICE, COMPUTER READABLE MEDIA, AND  
REPRODUCTION DEVICE

Enclosed are:

- ☒ Specification and Claims.
- ☐ Oath or Declaration.
- ☒ Transmittal Letter Under 37 C.F.R. § 1.53 and M.P.E.P. § 601.01.
- ☒ Five (5) sheets of formal drawings.
- ☐ An assignment of the invention to \_\_\_\_\_
- ☐ Certified copies of \_\_\_\_\_ priority application(s).
- ☐ Associate power of attorney.

The fee has been calculated as shown below:

CLAIMS AS FILED				
FOR	NUMBER FILED	NUMBER EXTRA	RATE	BASIC FEE \$385/\$770
TOTAL CLAIMS	20-20	0	x \$11 \$22	0.00
INDEP. CLAIMS	10-3	7	x \$40 \$80	\$560.00
Fee for Multiple Dependent claims \$130°/\$260				0.00
TOTAL FILING FEE -----				\$1330.00

☐ \*Verified Statement claiming small entity status is enclosed.

☐ Charge \$\_\_\_\_\_ to Deposit Account No. 06-1205. A duplicate copy of the paper is enclosed.

☒ The Assistant Commissioner is hereby authorized to charge any fees under 37 C.F.R. 1.16 or 1.17 which may be required during the entire pendency of this application, or to credit any overpayment, to Deposit Account No. 06-1205. A duplicate copy of this paper is enclosed.

☒ A check in the amount of \$1330.00 to cover the filing fee is enclosed.

☐ A check in the amount of \_\_\_\_\_ to cover the recordal fee is enclosed. A duplicate copy of this paper is enclosed.

☒ Applicant's undersigned attorney may be reached in our Washington D.C. office by telephone at (202) 347-8100. All correspondence should continue to be directed to our below listed address.



Attorney for Applicant

Reg. No. 31,558

FITZPATRICK, CELLA, HARPER & SCINTO  
277 Park Avenue  
New York, New York 10172  
Facsimile: (212) 758-2982

f501\w140120\RPB\tnn

RECORDING DEVICE, RECORDING METHOD, ELECTRONIC DEVICE  
METHOD OF CONTROLLING ELECTRONIC DEVICE,  
COMPUTER READABLE MEDIA, AND REPRODUCING DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a recording device such as a digital camera for digitalizing image or voice to record it, a recording method, an electronic device used together with the recording device, a method of controlling the electronic device, a computer readable media, and a reproducing device.

2. Description of the Related Art

There are conventional digital cameras for digitalizing image or voice to record it on PCMCIA (Personal Computer Memory Card International Association) recording media such as semiconductor memory cards or compact hard disks. The PCMCIA recording media is designed such that data recorded on the media can be read by a host computer. Image data and voice data are generally compression-coded to be recorded on the media.

Data related to an image, e.g., information such as a photographing date, a photographing mode, or photographing condition, are recorded in respective files. The respective file names are determined by a camera. For example, the

file name of an image is constituted by three head letters, e.g., "IMG", having a 5-digit number following the head letters.

In a conventional digital camera, as relative data to be added to an image, data such as a model name of camera, a production number of camera, a date, and photographing data which are generated by a camera are used. For this reason, a user cannot define arbitrary attribute information, e.g., exclusive user information which represents that the camera is his/her own camera.

The name of an image data file generated by a camera is fixedly defined by a program for operating the system of the camera to be generated. For this reason, a user cannot constitute a file name which is required by the user himself/herself, and after a photographing operation, the user inconveniently arranges files.

#### SUMMARY OF THE INVENTION

It is an object of the present invention to solve the above problem and provide an image recording device which can be easily used.

It is another object of the present invention to make it possible that a user externally set an attribute except for an additional attribute generated by an image recording device to store the attribute in a file.



device, according to a method depending on a photographing recording mode set by the user, a file name may be generated.

An external device may comprise means for setting the attribute data or the constituting method information of file name, and the recording device may communicate with the external device to set the attribute data and the constituting method information in the recording device. More specifically, in this case, according to this aspect, for example, there is disclosed a device having attribute data holding means for holding attribute data added to image data or voice data; means, having setting means for setting attribute data arranged outside a recording device, which communicates with the setting means to set the attribute data in the attribute data holding means; and recording means for storing the attribute data held in the attribute data holding means in an image data file or a voice data file during a recording operation of the image data or the voice data.

Still other objects and characteristics of the present invention will be apparent according to the following specification and the explanation of an embodiment.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram showing the arrangement of a

08092092 074497



convenience.

The electronic digital camera according to this embodiment is constituted by an optical system input section 101, a memory 102, a compression coding section 105, a media recording I/F 106, a CPU 107, a RAM 109, an operation section 110, a ROM 111, a nonvolatile memory 112, and a host communication I/F 114.

Image data processed by the optical system input section 101 is temporarily stored in the memory 102. The compression coding section 105 compression-codes the image data subjected to a signal process by the optical system input section 101 and stored in the memory 102. The compression-coded image data is written in a detachable recording media 108 through a media recording I/F 106. At this time, one image data file is generated for each image. As a method of compressing image data, for example, the JPEG method (compression method described in ISO/IECDIS 10918-1) standardized as an international standard scheme standardized can be used.

The media recording I/F 106 has a memory card interface standardized by PCMCIA or JEIDA (Japan Electronic Industry Development Association) as an interface for, e.g., the detachable recording media 108. More specifically, the media recording I/F 106 has a logic circuit and an interface connector for reading/writing the image data received from

00000000 071437

the compression coding section 105 from/in the detachable recording media 108 according to an interface protocol. As the detachable recording media 108, a memory card, a hard disk, or the like which is suitable for the interface protocol can be used. Files are recorded on the detachable recording media 108 according to, e.g., FAT (File Allocation Table) file system protocol of DOS (Disk Operating System).

Such a photographing recording operation or a communication operation (to be described later) is controlled by the CPU 107. A program for the photographing recording and the communication are stored in the read-only memory (ROM) 111, and the RAM 109 is used when the program read from the ROM 111 is executed.

The digital camera according to this embodiment is constituted such that a user uses the operation section 110 to set an image size (setting of a photographing recording mode). For example, image sizes of 640 x 480 and 320 x 240 can be selected. When the image size of 640 x 480 is selected, a generated file name is formed by using three head letters, e.g., "LRG" having a 5-digit serial number following the head letters. In this case, as the file name, LRG00001.JPG is used. On the other hand, the image size of 320 x 240 is selected, a generated file name is formed by using three head letters, e.g., "MED", having a 5-digit serial number following the head letters. In this case, as

20250420 14:49

the file name, MED00002.JPG is used.

The host communication I/F 114 used for communication with an external host computer 115 includes an interface circuit such as an RS232C, a logic circuit for character sync communication, and the like. A software recorded on the ROM (Read Only Memory) 111 of the camera is constituted such that the CPU 107 of the camera operates while understanding information sent from the host computer 115 to the host communication I/F 114. The host computer 115 is connected to the outside of the camera by using the RS232C, so that an application operated on the host computer 115 can communicate with the camera through the RS232C. In a usual photographing state, the camera and the host computer 115 are used in a disconnection state.

The host computer 115 may be designed to perform a read/write operation of the detachable recording media 108 mounted on the camera through a communication path 116, the host communication I/F 114, and the camera. On the other hand, a media recording I/F 117 for performing a read/write operation of a detachable recording media 118 may be added to the host computer 115 itself to read an image file photographed by the camera from the detachable recording media 118. When the image file is read, as shown in FIG. 5, the file name is displayed on a window 503 on a screen 500 of the host computer 115.

In this embodiment, a user can input attribute information added to data file in a camera through a GUI (Graphical User Interface) presented by the application of the host computer 115. The screen of the host computer 115 when attribute information is input is as shown in FIG. 4. As the attribute information, the exclusive user information of a camera, e.g., user information, i.e., a name, a section, an address (e.g., Ozaki, Suzuki, etc), is input.

Attribute information input by a user is transferred to the camera through the communication path 116 and the host communication interface 114. The camera stores the transferred attribute information in the nonvolatile memory 112, e.g., an EEPROM. When stored data is to be seen, the data is displayed on the screen of the host computer 115 as shown in FIG. 5.

Although the order of explanations is reversed, in FIG. 5, reference numeral 505 denotes attribute information of each data file. Reference symbol "Thm" denotes a reduced image; "Med", an intermediate image size; "Sml", a small image size; and "Lrg", a large image size. In FIG. 5, reference numeral 507 denotes a user information of the camera as attribute information.

When attribute information set by a user is present in the nonvolatile memory 112, and an image data file is formed, the camera stores the attribute information in the

file according to a predetermined format. For example, in case of JPEG, the attribute information can be stored by using an area (= application marker segment) which can be freely used by an application.

In this embodiment, a user can input information related to a method of constituting the name of a data file in the camera through GUI (Graphical User Interface) presented by the application. For example, information related to three head letters of the file name is input. The three head letters of the file name input by the user is transferred to the camera through the communication path 116 and the host communication I/F 114. The camera stores the transferred information in the nonvolatile memory 112.

When three head letters of the file name set by the user are present in the nonvolatile memory 112, and an image data file is formed, the camera forms a file name by using the three head letters of the file name and 5-digit serial number following the three head letters.

FIG. 2 is a view showing a detailed arrangement of the digital camera according to this embodiment arranged as described above and the host computer 115. Referring to FIG. 2, the host computer 115 is constituted by a personal computer body 115a having a known arrangement, a display 115b for displaying an image or the like, and a keyboard 115c for inputting information. A digital camera 100

according to this embodiment has a PCMCIA card slot 120, so that a digital image photographed by the digital camera 100 is recorded on a PCMCIA card.

Reference numeral 119 denotes a PCMCIA slot cover. When the PCMCIA slot cover 119 is closed, the PCMCIA card slot 120 is concealed, and the PCMCIA card cannot be inserted or removed. Only when the PCMCIA slot cover 119 is open, the PCMCIA card can be inserted or removed. Reference numeral 121 denotes a card cover switch (not shown in FIG. 1) for detecting the opening/closing state of the PCMCIA slot cover 119. The card cover switch 121 is turned on when the PCMCIA slot cover 119 is completely closed, and is turned off when the PCMCIA slot cover 119 is open.

The communication path 116 for connecting the digital camera 100 according to this embodiment to the host computer 115 is constituted by a serial or parallel cable. Through the cable 116, the host computer 115 can receive an image recorded on the PCMCIA card of the digital camera 100 to display the image, or can record data on the PCMCIA card. In this case, the host communication I/F 114 in FIG. 1 includes a serial or parallel input/output port.

FIG. 3 is a view showing a detailed arrangement of the host computer 115. Referring to FIG. 3, reference numeral 209 denotes hardware; 205, an operating system (OS) operated on the hardware 209; and 204, application software operated



software 204 to receive an input from a device connected to an external section regardless of the hardware 209 and making it possible to perform an output operation to the device. Reference numeral 210 denotes a keyboard interface for receiving an input from the keyboard 115c, and reference numeral 212 denotes an input/output port interface used when the device management system 206 receives an input from the input/output port 216 and performs an output operation.

The input/output port 216 is a parallel or serial port, and is connected to the parallel or serial cable 116. Reference numeral 201 denotes a digital camera control system comprising the communication control means 202 and the information display means 203. The communication control means 202 requests the digital camera 100 to transmit an image or requests the digital camera 100 to write data therein. The information display means 203 displays data transmitted from the digital camera 100 or displays the state of the digital camera 100 for a user. A case wherein data from the digital camera 100 is displayed on the window 503 in the screen on the host computer 115 is shown in FIG. 5.

<Another Embodiment>

In the above embodiment, attribute information and file name constituting information set by a user are transferred from the host computer 115 to the digital camera according



Although a method of constituting a file name having three head letters which can be changed is described in the above embodiment, the number of letters may be arbitrarily set within limit related to the length of a file name. Although only a case of image is described in the above embodiment, settings may be made in either case of image or case of voice. When a compressed image is formed together with an original image, it may be made possible to perform a setting for the compressed image. In this manner, a categorizing operation for voice, main images, and compressed images becomes considerably easy.

In order to operate various devices to realize the functions of the above embodiment, the program codes of software for realizing the functions of the embodiment is supplied to a computer in an apparatus connected to the various devices or in the system. An embodiment wherein the various devices are operated according a program stored in the computer (CPU or MPU) of the system or the apparatus is included in the spirit and scope of the present invention.

In this case, the functions of the above embodiment are realized by the program codes themselves of the software. The program codes themselves and a means for supplying the program codes to the computer, e.g., a storage media in which the program codes are stored, constitute the present invention. As the storage media for storing the program

codes, for example, a floppy disk, a hard disk, an optical disk, an photomagnetic disk, a CD-ROM, a magnetic tape, a nonvolatile memory card, a ROM, or the like can be used.

Note only in a case wherein the functions of the above embodiment are realized such that the computer executes the supplied program codes, but also in the following case, the program codes are included in the embodiment of the present invention as a matter of course. That is, the functions of the above embodiment are realized by simultaneously using an OS (Operating System) in which the program codes are active in the computer, another application software, and the like.

Furthermore, the following case is included in the present invention as a matter of course. That is, after the supplied program codes are stored in a memory incorporated in a function extension board of the computer or in a function extension unit connected to the computer, a CPU or the like incorporated in the function extension board or the function extension unit partially or entirely executes actual processes on the basis of the instruction of the program codes, and the functions of the above embodiment are realized by the processes.

As has been described above, according to the embodiment, exclusive user information of a recording device can be externally freely updated.

In addition to the above advantage, the exclusive user

attribute can be added to files recorded by the recording device. For this reason, the files can be advantageously arranged later.

An attribute data set by a user can be automatically added to an image data file or a voice data file as image data or an additional attribute except for an additional attribute generated by the recording device in recording of image data or voice data to record the image data or the voice data.

A file name to be recorded on a recording media can be changed according to a photographing recording mode set by a user.

According to constituting method information of file name set by a user, the name of an image data file or a voice data file can be determined by a method different from a naming method fixedly used by the recording device.

Attribute data set for each detachable recording media by a user can be automatically added to an image data file or a voice data file as an additional attribute except for an additional attribute generated by the recording device during a recording operation of image data or voice data to be recorded.

According to constituting method information of file name set for each detachable recording media by a user, the name of an image data file or a voice data file can be

determined by a method different from a naming method fixedly used by the recording device.

Since a file name itself can include effective information for searching, for example, searching on a host computer arranged outside the recording device can be considerably easily performed advantageously. In particular, since a file name can be changed for each recording device or each detachable recording media, arrangement or searching for files on various applications operated on the host computer can be easily performed.

Since effective information for searching can be included in a file, for example, searching on a host computer arranged outside the recording apparatus can be considerably easily performed advantageously. In this case, since attribute information can be changed for each recording device or each detachable recording media, arrangement or searching for files on various applications operated on the host computer can be easily performed.

In the above embodiment, exclusive user information in the digital camera can be rewritten from an external device. In this case, an embodiment made to prevent the exclusive information from being rewritten by a third party who does not a proper user will be described below.

In this embodiment, only when a predetermined password code is input from an external device, it is made possible

to rewrite the exclusive user information.

For this reason, the exclusive user information and an authentication code paired with the exclusive user information are stored in the digital camera. When the exclusive information is rewritten from the external device, the user inputs an authentication code. Only when the input authentication code and the authentication code in the digital camera satisfy a predetermined relationship, e.g., coincide with each other, it is made possible that the user rewrite the exclusive user information.

Accordingly, the exclusive user information can be made impossible to be easily rewritten by the external device, and the exclusive user information can be managed more safely.

In this case, the authentication code may be the same as the exclusive user information.

[illegible]

WHAT IS CLAIMED IS:

1. A recording device comprising:  
means for recording given image data or voice data on a media;  
storage means for storing an exclusive user attribute;  
and  
setting means for setting the exclusive user attribute according to an external instruction.
2. A recording device according to claim 1,  
characterized in that said setting means is means for  
setting the exclusive user attribute according to an  
instruction from an external computer.
3. A recording device according to claim 1,  
characterized in that the exclusive user attribute is added  
to respective files of image data or voice data recorded by  
said recording means.
4. A recording method comprising:  
the step of recording given image data or voice data on  
a media;  
the step of storing an exclusive user attribute; and  
the step of setting the exclusive user attribute  
according to an external instruction.
5. A recording method according to claim 4,  
characterized in that the setting step is the step of

20250926 14:04:26

setting the exclusive user attribute according to an instruction from an external computer.

6. A recording method according to claim 4, characterized in that the exclusive user attribute is added to respective files of image data or voice data recorded by the recording step.

7. An electronic device which is used together with a recording device having recording means for recording given image data or voice data on a media, storage means for storing an exclusive user attribute, and setting means for setting the exclusive user attribute according to an external instruction, comprising:

changing means for changing the exclusive user attribute of said setting means.

8. An electronic device according to claim 7, characterized in that the exclusive user attribute is added to files of image data or voice data recorded by said recording means.

9. A method of controlling an electronic device used together with a recording device having an exclusive attribute which can be set by an external instruction comprising:

the step of inputting the exclusive user attribute; and

the step of outputting a signal for setting the exclusive user attribute input by the step in said recording

device.

10. A computer readable media which stores a control method according to claim 9 such that the control method can be read by a computer.

11. A recording device comprising:

attribute data generation means for generating attribute data related to at least one of image data and voice data according to communication from an external device;

attribute data holding means for holding attribute data generated by said attribute data generation means in advance; and

recording means for automatically adding attribute data held in said attribute data holding means to the image data or the voice data to record the image data or the voice data during a recording operation of the image data or the voice data.

12. A recording device according to claim 11, characterized in that said external device comprises attribute data setting means, and said attribute data generation means communicates with said external device to hold the attribute data in said attribute data holding means.

13. A recording device comprising:

constituting method holding means for holding

20250927 14:49:07

constituting method information of name related to at least one of an image data file and a voice data file in advance;

mode setting means for setting a photographing recording mode; and

file name determining means for automatically determining a file name of the image data or the voice data according to information selected depending on a photographing recording mode set by said mode setting means from said constituting method information of name held in said constituting method holding means during a recording operation of the image data or the voice data.

14. A recording device comprising:

constituting method setting means for setting constituting method information of name related to at least one of an image data file and a voice data file in advance;

constituting method holding means for holding said constituting method information set by said constituting method setting means in advance; and

file name determining means for automatically determining a file name of the image data or the voice data according to said constituting method information of name held in said constituting method holding means during a recording operation of the image data or the voice data.

15. A recording device according to claim 14, characterized in that said constituting method setting means



the voice data according to said constituting method information of name read from the data file during a recording operation of the image data or the voice data.

18. A reproducing device characterized in that image data or voice data recorded by a recording device according to claim 11 is reproduced together with the attribute data.

19. A recording system comprising:

recording means for recording given image data or voice data on a media;

first storage means for storing an exclusive user attribute;

second storage means for storing authentication information; and

change means for changing the exclusive user attribute stored by said first storage means after an authentication operation is performed by said authentication information stored in said first storage means.

20. A recording system according to claim 1, further comprising:

authentication means for performing an authentication operation on the basis of said authentication information.

0362203.074497  
264770 26026880

ABSTRACT OF THE DISCLOSURE

It is an object that a user sets an attribute except for an additional attribute generated by a digital camera to store the attribute in a file. There is disclosed a system including a host computer serving as an attribute data setting means for setting attribute data related to image data or voice data, a nonvolatile memory serving as an attribute data holding means for holding the set attribute data in a digital camera in advance, a CPU serving as a recording means for automatically adding the attribute data held in the nonvolatile memory to the image data or the voice data to record the image data or the voice data, and a media recording I/F, wherein a user sets attribute information added to respective image or voice data to hold the image or voice data in the digital camera, and, during formation of image or voice files, the digital camera stores the set attribute information in the files.

202503 07447 264720 26025830

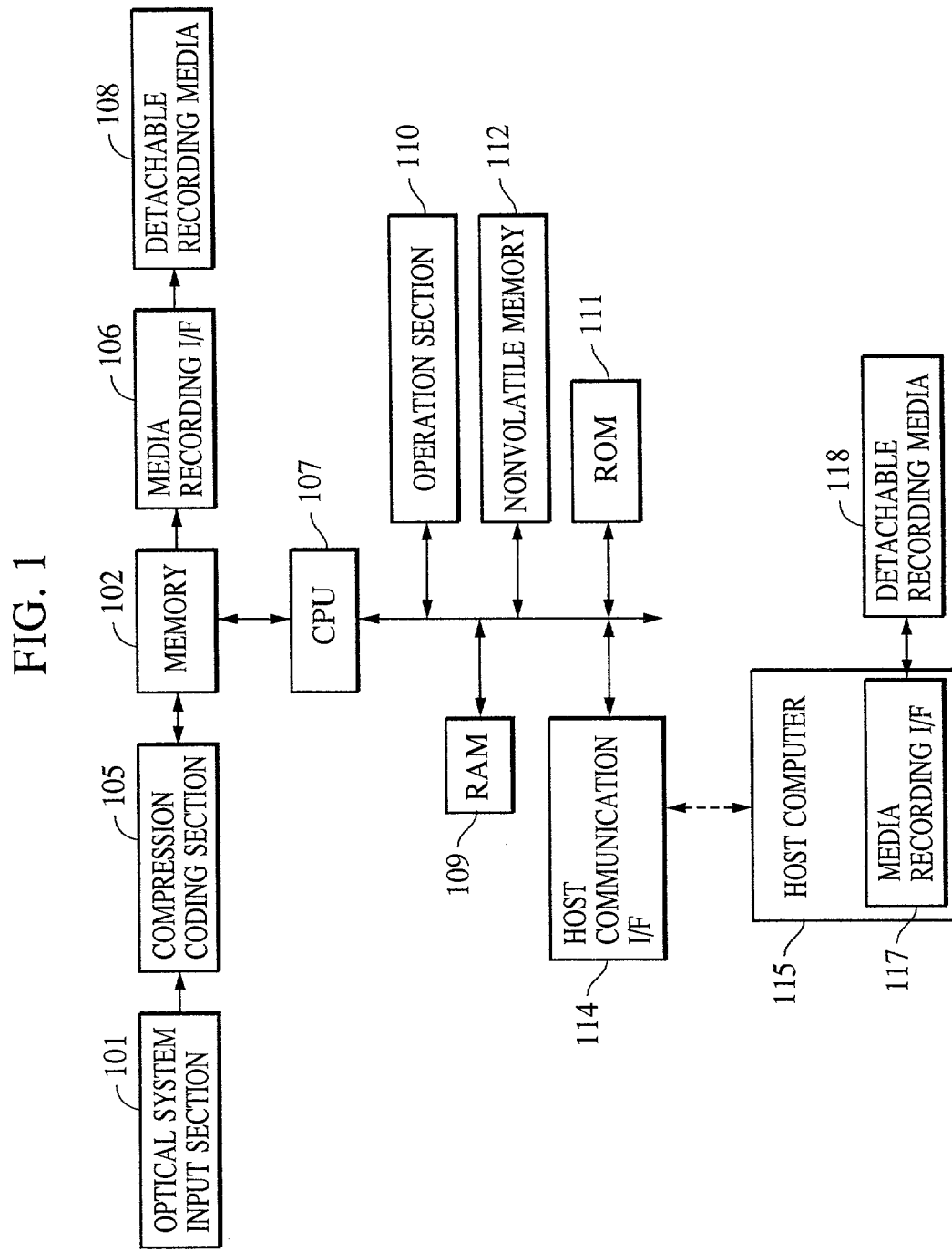


FIG. 2

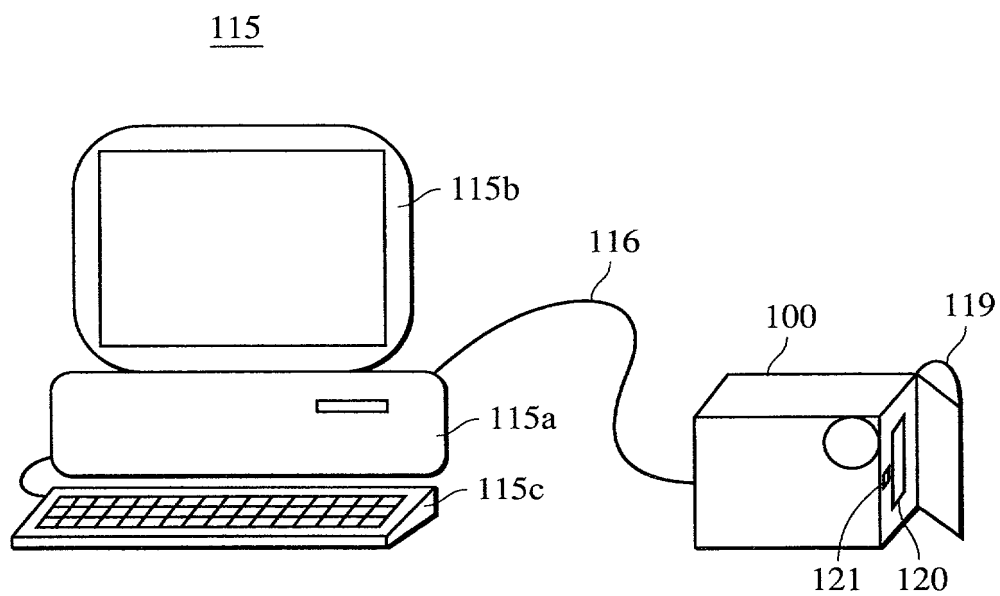


FIG. 3

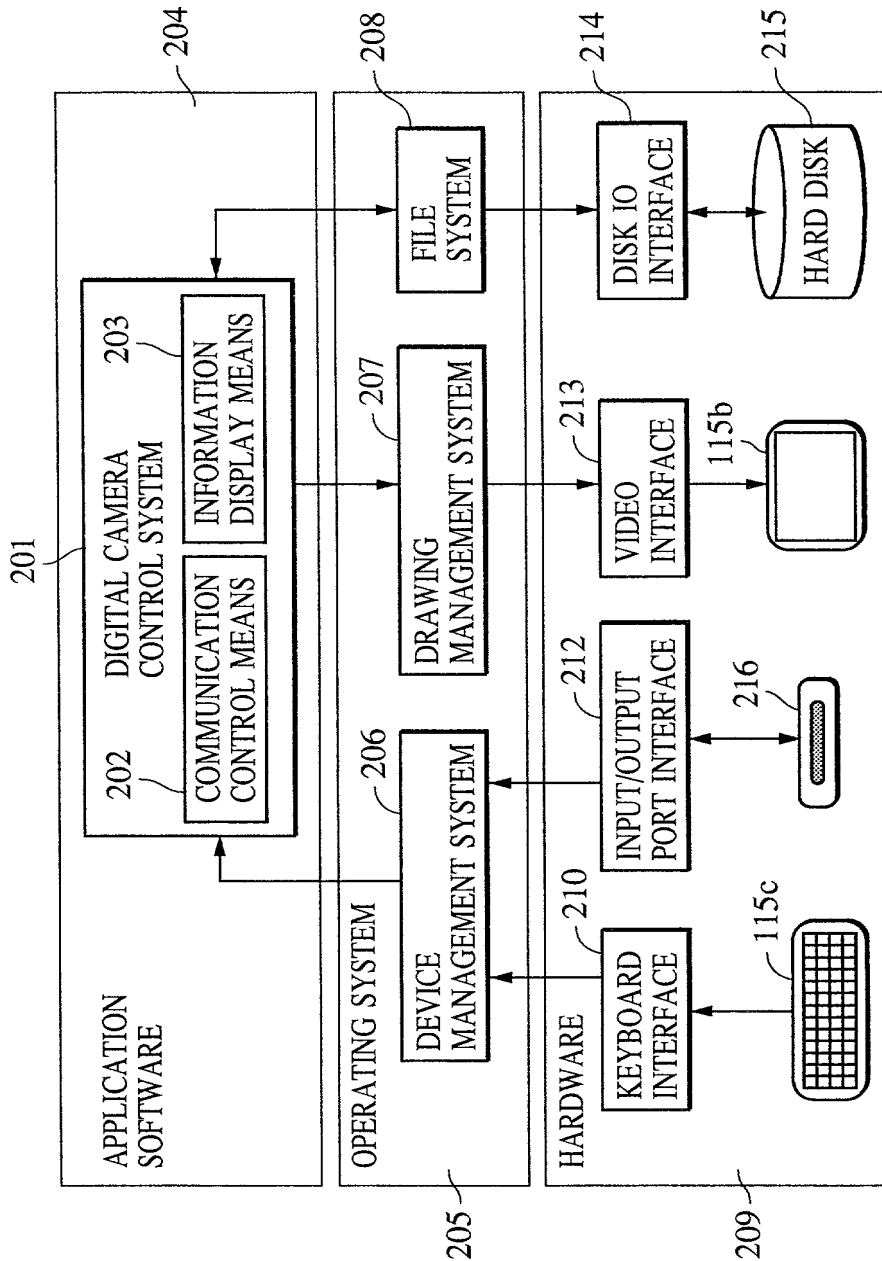


FIG. 4

<p>XXXshot Profile</p>		<p>Owner's Name Neli Hayes</p>	
<p>Status</p> <div><div><div><div><div></div><div>+</div></div><div><div>-</div><div></div></div></div><div>OK</div></div><div><div><div></div><div>△</div></div><div>100%</div></div></div>		<p>Calender</p> <div><p>Zone [GMT 08:00] Pacific Time [US&amp;Canada] ; Tijuana</p><p>Date 2 / 28 / 1996 Month Day Year</p><p>Time 9 : 56 AM Time</p><p><input checked="" type="checkbox"/> DayLight Savings Time</p></div>	
<p>OK</p> <p>Cancel</p>		<p>Camera Model : DE / 1 Version : 1.23</p> <p>PCMCIA Card : in Camera Size : 4MB</p>	
		<p>?</p>	

FIG. 5

505					507
Name	Size	Type	Modified	Owner's name	
<input type="checkbox"/> Thm _ 0001. tif	15KB	TIF File	5/15/96.3.36PM	Ozaki	
<input type="checkbox"/> Thm _ 0002. tif	15KB	TIF File	5/15/96.3.40PM	Ozaki	
<input type="checkbox"/> Med _ 0001. jpg	203KB	U lead Photo 1...	5/15/96.4.11PM	Ozaki	
<input type="checkbox"/> Sml _ 0001. jpg	30KB	U lead Photo 1...	5/3/96.4.22PM	Suzuki	
<input type="checkbox"/> Lrg _ 0001. jpg	800KB	U lead Photo	5/1/96.4.02AM	Suzuki	
503 WINDOW					500 PERSONAL COMPUTER SCREEN